## EcoStruxure Power Monitoring Expert 9.0

What's New?

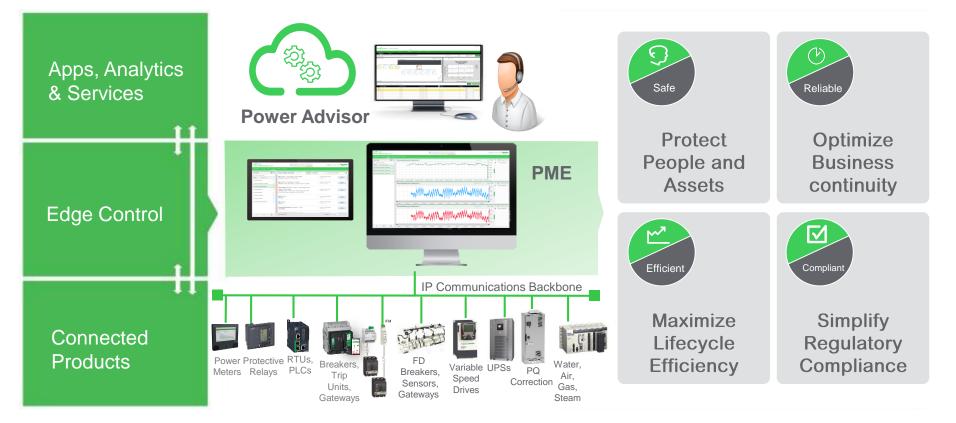
Toronto PLUG 2018 Juan Arias



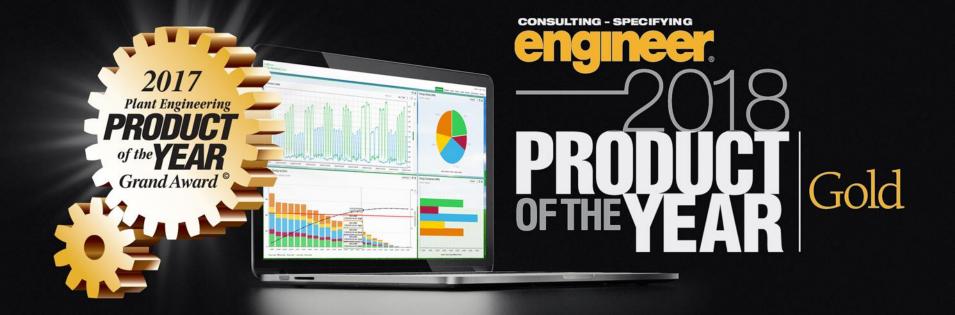
Confidential Property of Schneider Electric

#### PME the Core of EcoStruxure Power

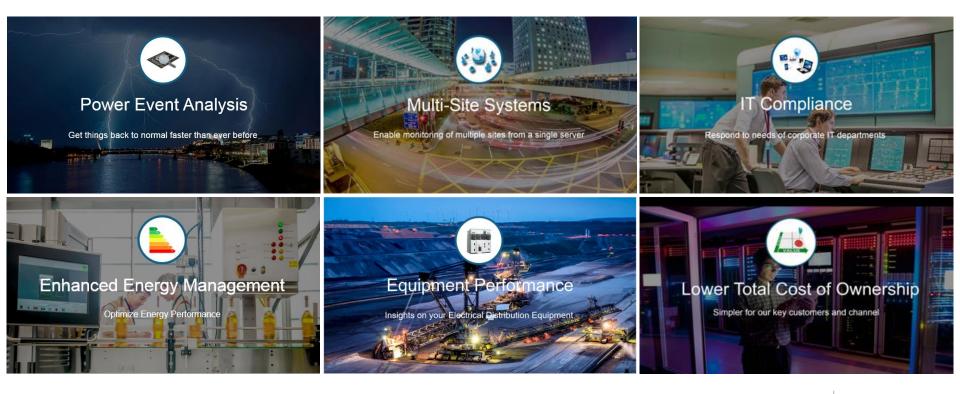
Bringing Edge Control to Energy and Power Management



#### Award Winning EcoStruxure Power Monitoring Expert



#### **PME 9.0 Major Innovation Themes**





#### Power Events Analysis

Get things back to normal faster than ever before



## Power Events Analysis

The Right Information at the Right Time



• "I need to quickly see the impact of incidents that effect my facility. I have too many alarms to understand what is really going on. I don't want to be distracted by irrelevant information when I am trying to restore operations"

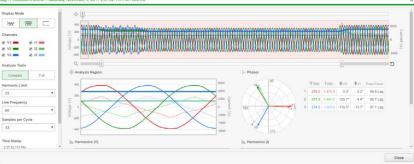


- Faster incident analysis by automatic grouping of related alarms.
- Make faster decisions, with key alarm information such as disturbance direction - available at a glance
- Ensure important information is not lost in a flood of data with intuitive and powerful alarm filtering, searching, and categorization.

+

• See what you've missed with alarm counters

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Connected Devices

**Time Synchronization** 

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Smart Alarms, Timeline and waveform analysis

## Demo





### **IT** Compliance

#### Operation in the most demanding IT environments



#### **IT Compliance**

#### Operate in Demanding IT Environments



• "As the IT department, we need our facility systems on our IT network to comply to our IT policies and minimize risk from cybersecurity threats that could impact our operations or reputation"



- Support for commonly recognized IT policies such as Windows Active Directory to enable centralized user management and security policies.
  - Central user management

Cybersecurity

- Secure password change policies
- Comply with corporate cybersecurity directives and align with industry-standard best practices

-



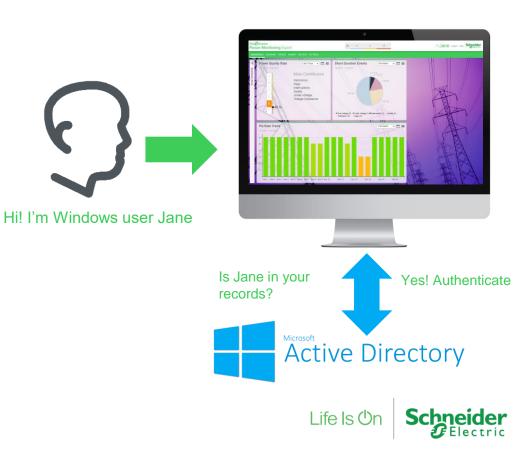




#### Windows Active Directory Integration

PME supports integration of Windows users and groups

- Login to PME using your windows credentials (active directory or local users)
- Single sign on (SSO) support.
- Enforce password policies via Windows (complexity, expiration, etc)
- Support for both Windows and local PME users
- Compliance with common IT requirement

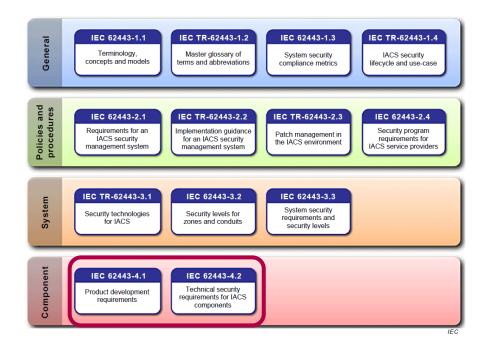


#### **Cybersecurity Compliance**

PME 9.0 is designed for IEC62443 compliance at the component level:

- IEC62443-4-1: Assess a supplier's product development lifecycle for industrial automation and control systems (IACS)
- IEC62443-4-2 (SL1): Defines the security requirements for the components of an IACS

Key prescription item. Make sure to specify this requirement



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#### **Multi-Site Power Management Solution**

#### Empower Users Without Compromising Security or Usability



#### **Multi-Site Support**

#### Localized Role Based Access Control



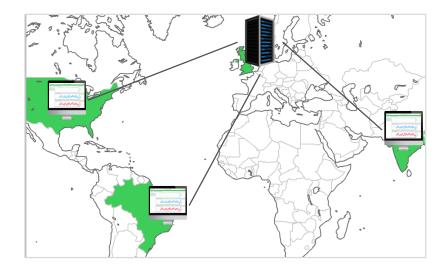
• "I manage multiple locations from one system, and I need to let local users view the data from their site without being overwhelmed by all the data from the other sites"



- For local users in a system connected to multiple sites, enables a user experience like having their own system
- Enables restriction of users to authorized sources and content based on their Group.

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- Easy setup and administration.
- Simplifies user management with Active Directory integration.



User Groups

App Shared Library

+

Multi-Timezone



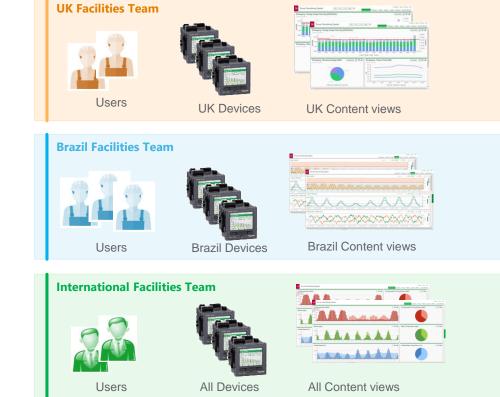
### Role-Based Access Control (RBAC)

PME Groups



A user group is a set of users with access to the same list of devices/sources and the same shared web content.

- Users of a group can have private content (dashboards, diagrams, alarms and reports)
- Users can belong to multiple groups
- Users can be Windows or native PME
- PME groups are not required if content partitioning is not needed



## Demo



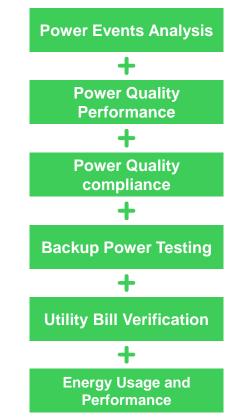


### New and Improved Advanced Applications



#### The Ultimate Energy and Power Management System PME 9.0 + ION9000





- From microseconds to years of data analysis of your power network
- Verify compliance with most common PQ standards or customize to meet local regulations
- Device specific to system wide event analysis

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• And much more...

### **Energy Analysis & Performance**

Powerful Energy Management Tools



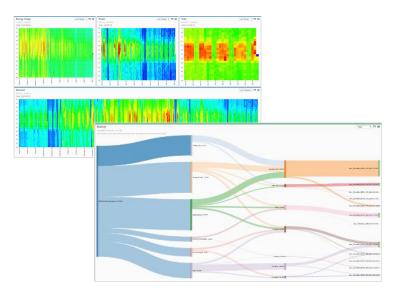
• "I want to analyze energy usage and performance indicators for my facility or building against a baseline and monitor and verify systematic improvement initiatives like ISO50001"

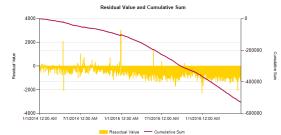


- Understand better what influences your energy usage
- Create energy usage models and compare actual consumption against expected
- Accurately measure energy savings in the presence of changing variables like weather or production.

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 Track KPIs such as Energy Intensity (kWh/unit) or Coefficient of Performance (COP)





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Advanced Usage Analysis Gadgets Consumption and Scheduled alarms



### **Energy Analysis Module**

Improve operational efficiency, energy performance and compliance (ISO50001) with **new** and **improved** functionality:

- Energy modelling
- KPI/EnPI calculation and tracking as per ISO50006 requirements

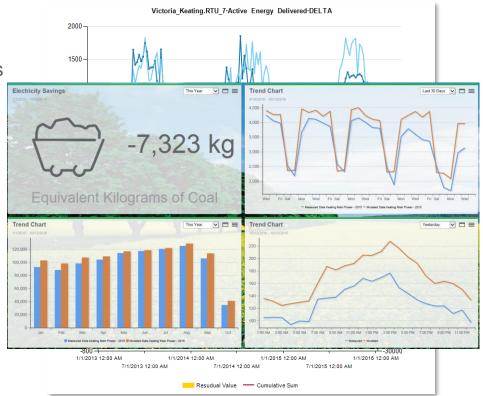
KPI: Key Performance IndicatorEnPI: Energy Performance IndicatorsISO 50006:2014: Measuring energy performance using energy baselines (EnB) and energy performance indicators (EnPI)



### **Energy Modelling**

Understand better the influence of external factors and schedules on energy usage.

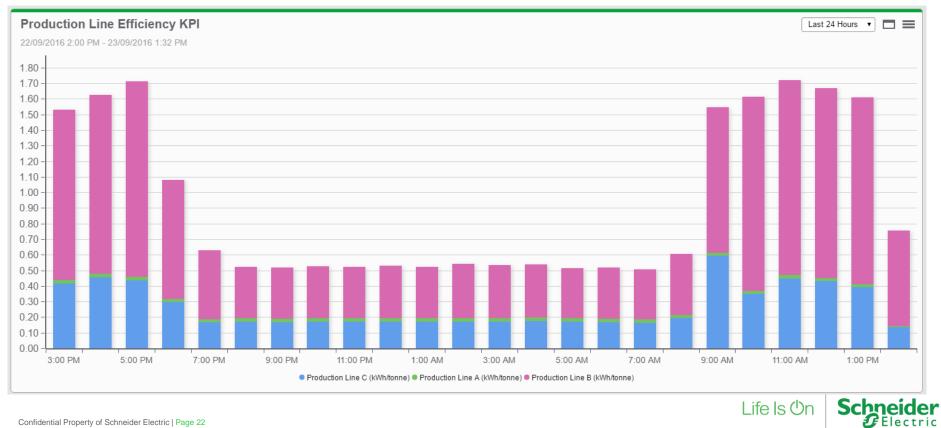
- Meet ISO50001 and SEP standards requirements for baselining and tracking energy performance
- Quantify savings or losses caused by any system/behavior change
- Get notified if usage is outside expected values as per model
- Forecast power/energy usage



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#### **KPI** Engine



## Demo



#### PME 9.0 Turns Historical Data into Insights

Smart Setpoints

Is my current energy usage typical for this hour of the day and this day of the week based on my last 6 months usage?

I need to be notified if my current demand is higher than the demand values in the last 6 months

Is my current harmonic distortion 5% higher than my average in the last week?

Notify me when my daily water usage is 20% higher than the average for the last 3 weeks



#### **Smart Setpoints**

Setpoints Based on Usage Analytics

Monitor values being logged in the database (raw of aggregated) and alarm on exception rules and time based comparisons

- Raw data (datalog values, 15 min, 10min, etc)
- Aggregate hourly or daily
- Over/Under Active conditions vs Average, Maximum or Std deviation (σ)
- Comparison range for up to 2 years back
- Evaluate for all values or same hour of day and/or same day of week



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#### Electricity Consumption (Smart Setpoint)

- Compare recent datalog consumption data against a relative setpoint.
- Compare recent datalog co Creates Electricity Alarms.

	Highest Value in						Abnormally High Value
	Lowest Value in		1				Abnormally Low Value
	Highest Value						Abnormally High Value for similar time of day
Daily	/alue higher than	50% ab	ove Averag	е	User Defi		Abnormally High Value for the day of week
					0001 001		
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Aggregated	Hourly	Ψ.	Over	٣	2.66	×	Standard Deviations from Mean ( $\sigma)$ $\qquad \blacksquare$
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#### **Alarm Schedules**

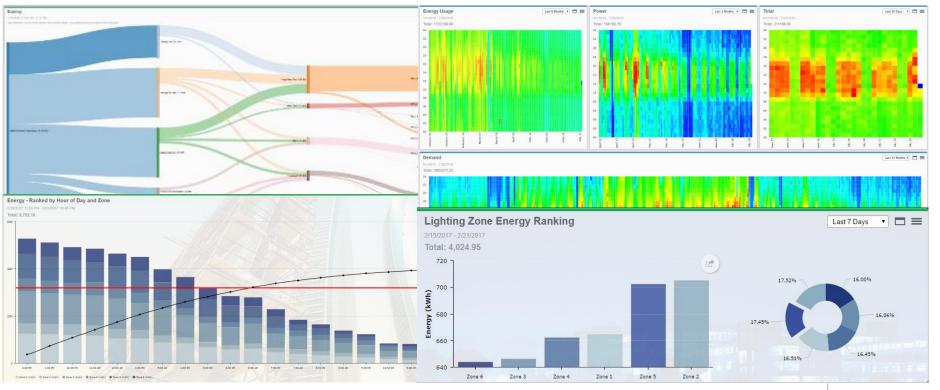
- Part of the workflow to configure software based alarms
- Schedules define when software based Alarm rules are active or inactive
- Define active or inactive hours per day
- Apply multiple schedules to an Alarm Rule

Alarm Template         Measurements         Details         Sources         Schedule         Summary           Select Alarm Schedule	Edit Alarm Rule							х
Week Days       Edit Schedule       Add Schedule         A schedule defines when an enabled Alarm Rule can enter the Active Condition.       Schedules are applied in the timezone of each source. If an Alarm Rule has sources from different timezones, then it is possible for a schedule to be active for some sources, while inactive for others at a given point in time.       If an Alarm is in the Active Condition when a schedule transitions to inactive then the Alarm will be deactivated.       Realtime and Communication Status alarms input conditions will only be evaluated during the Active portion of the schedule.         Datalog alarm inputs will be evaluated against the schedule to be "Interval Ending", implying that they represent a reading for the previous time interval.       Example:	Alarm Template	Measurements	Details	Sources	Schedule	Summary		
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Schedules are applied in the timezone of each source. If an Alarm Rule has sources from different timezones, then it is possible for a schedule to be active for some sources, while inactive for others at a given point in time. If an Alarm is in the Active Condition when a schedule transitions to inactive then the Alarm will be deactivated. Realtime and Communication Status alarms input conditions will only be evaluated during the Active portion of the schedule. Datalog alarm inputs will be evaluated against the schedule to ensure that a given reading represents data from within the Active portion of the schedule. Example:	Week Days					Edit Schedule	Add Schedule	9
<ul> <li>Using a schedule that goes hactive at 5:00pm, a data input infinite active 5:00pm will not be considered part of the inactive schedule.</li> <li>Using a schedule that goes inactive at 5:00pm, a data input from exactly 5:00pm will not be considered part of the inactive schedule.</li> </ul>	Schedules are ap active for some s If an Alarm is in th Realtime and Cor Datalog alarm inp schedule. Datalog Example: - Using a schedul	uplied in the timezone of pources, while inactive fo he Active Condition whe mmunication Status alar pouts will be evaluated ag g alarm inputs are consi le that goes Active at 3.0	each source. If r others at a give n a schedule tra ms input conditio lainst the schedu dered to be 'Intei 200pm, a data inp	an Alarm Rule has an point in time. nsitions to inactive ons will only be ev le to ensure that a rval Ending', imply ut from exactly 3:0	e sources from diffe e then the Alarm wil aluated during the a given reading rep ing that they repres	Il be deactivated. Active portion of the schedu resents data from within the sent a reading for the previo nsidered part of the Active :	ule. Active portion of the sus time interval. schedule.	
							Cancel Save	



#### Usage Analysis Dashboard Module

6 New Gadgets!, Single Licence, Easy Supply Chain



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## Demo



### **Equipment Monitoring & Performance**

Insights on your Electrical Distribution Equipment



• "I want to keep track of key operational parameters for electrical equipment. Be notified of configuration changes, lifespan reduction, or risk/safety hazards"



- Ensuring proper breaker operation and fault isolation avoiding safety hazards
- Detecting abnormal conditions (e.g Temperature) that represent a risk to operations.
- Operate breakers remotely to minimize exposure to arcflash risk
- Monitor and locate circuit insulation faults (e.g protect patient safety during operations

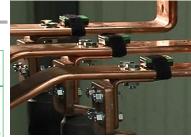


#### Hospitals

Line Insulation Monitoring System

📰 OR Room 1 Details - Page 1

OR.Panel01:		No Test In	Progress
Status:		Haz	ard
Total Hazard C	urrent:		7.80 mA
Load:			71.00 %
Volts L1 - L2:			120.20 V
Volts L1 - Grou	ind:		70.71 V
Volts L2 - Grou	ind:		70.71 V
Impedance:		2	8.00 kOhn
Resistance:		2	8.00 kOhn
Leakage Cap:			8.00 nF
Temperature:			Normal
	Circuit Fault Loca	tion	
EDS151_1 1	EDS151_1 2	🕕 EC	S151_1 3
EDS151_1 4	EDS151_1 5	🕕 EC	S151_1 6
() EDS151_2 1	() EDS151_2 2	()) EC	S151_2 3
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Breaker Performance Module

Backup Power Module

**Condition Monitoring** 



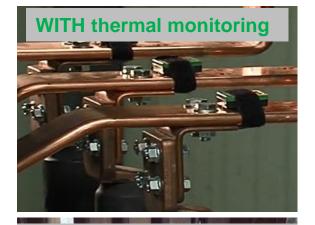


## Demo



#### **Continuous Thermal Monitoring**

22% of fires in a facility are due to electrical failures



WITHOUT thermal monitoring



Avoid electrical fires by **detecting and alarming on abnormal temperature** rise in electrical distribution equipment.

**24/7 continuous monitoring in MV and LV equipment** to provide early detection of abnormal temperature rises.

**Reduce total cost of ownership by 60%** throughout the lifecycle by reducing periodic thermography.

**Wireless, self-powered sensors** (no batteries) can be deployed anywhere, including in areas that are difficult to see with a thermal camera

As busbar joints degrade, they can overheat and cause a fire risk.



Reduce recurring manual thermal imaging costs





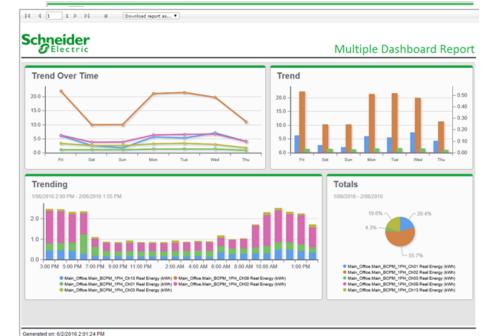
## Demo



#### Dashboard Report: Custom Reports Made Easy

Turn any PME Dashboard into a report

- Schedule and subscribe in any of the existing report formats (pdf landscape/portrait, Excel, tiff)
- Two Reports, Landscape & Portrait
- Allows for multi dashboard/slideshow selection, each selection is on its own page
- Allows for an additional custom page where any link can be entered



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Generated on: 11/22/2017 3:51:13 PM

#### **Grid Gadget**

- Real time tables functionality embedded in Dashboards
- Hierarchy support!
- Default Templates for quick selection
- Configurable row/column headers (Sources or Measurements)
- Improved diagnostic information:
  - Disabled, Comm Error, Measurement not supported, Stale, etc.
- Supports numbers, Boolean, date/time and strings.

ast Update: 11/20/2017 10:39:12	AM Update in 0:07			
Sources 🌲	Voltage A-B (V) 🌐	Current A (A) 🌐	Real Power (k 🌐	Power Facto
Substation1.feeder_2	0	8	2	74.7
Substation1.Main_Feeder	0	8	2	-87.3
Substation1.Main_Meter	0	83	22	-87.3

Grid Gadget Last Update: 11/20/2017 10:41:0:	3 AM Update in 0:04		
Measurements ≑	Substation1.feeder_2 👙	Substation1.Main_Feeder 👙	Substation1.Main_Meter 🗘
Voltage A-B (V)	0	0	0
Current A (A)	8	8	83
Real Power (kW)	2	2	22
Power Factor	74.8	-87.3	-87.4

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#### **New Productivity Tools**

#### Engineering Tools For the End Users and Channel



### **Efficient Commissioning and Deployment**

#### Increased Engineering Efficiency



• "I want minimize the engineering deployment and configuration costs to maximize the profitability of my projects"



- Consolidation of technical documentation into a single guide that covers the lifecycle of the project
- Easier and faster creation of third party device types for Modbus and OPC.
- Out of the box components and wizard process for DDD
   TVD deployment
- Manual data editor, smart gap filling, creation of sources and measurements, etc.
- Tool to upgrade, migrate and backup the PME system



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Currents		F4C1 Device Name	400030	ASCIL	22340																				
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<ul> <li>Spectral Components</li> <li>Time of Line</li> </ul>		E Medium Priority Counter	+13521	UP#715	190432387																				
Urbalances		Total Alarms Counter	413519	UEVIT26	\$93432285																				
Makaana		- Over Current Phase Alarm	+11059	Helediool	399716737	0x0001																			
Register Selected		Over Current Phase-Adi Status	+11079	PasketBool	339716738	0x0001																			
		E Over Current Phase-Alam Count.	413523	UBVT 16	229716746																				
		E Over Current Phase-Alam Ena	411040	HiskelBook	329716739	0x0001																			
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		6 Over Current Phase Photop Set	414005	F32-4321	399716741																				





### **Technical Documentation 2.0**

Comprehensive consolidation and simplification of previously siloed technical documents.

- Improved search and elimination of information gaps
- Easier to navigate and find information when you need it
- Just-in-time procedures to reduce task completion time
- Easier to find related and supporting information without having to obtain related documents
- Single Document: PME System Guide

PME documentation before 9.0



One master guide to rule them all...

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